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On the taxonomy of the plusiine genus *Scriptoplusia* Ronkay, 1987 (Lepidoptera, Noctuidae) with description of a new species*

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Abstract The taxonomic survey of the genus *Scriptoplusia* is given with the description of *S. pulchristigma* sp. n. from Nepal, N. India and Thailand. *S. noona* is downgraded to a subspecies of *S. nigriluna*; *S. kuznetzovi* is synonymized with *S. nigriluna*.

Zusammenfassung Die Gattung *Scriptoplusia* wird zusammenfassend bearbeitet. Eine Art *Scriptoplusia pulchristigma* n. sp. von Nepal, N. Indien und Thailand wird neu beschrieben. Das Taxon *S. noona* wird auf den Status einer Unterart zurückgestuft. *S. kuznetzovi* wird mit *S. nigriluna* synonymisiert.

Key words Lepidoptera, Noctuidae, Plusiinae, *Scriptoplusia*, *Scriptoplusia pulchristigma* sp. n., *Scriptoplusia noona*, synonym, taxonomy.

Historical view

The taxonomy of the genus *Scriptoplusia* (the “*Plusia* (s. l.)”-*nigriluna* species group) is rather difficult with many taxonomic and nomenclatural confusions as well. The strongly conform external appearance and the wide individual and geographic variation of the group led to both the separation and the unification of the different populations of the species belonging to the group.

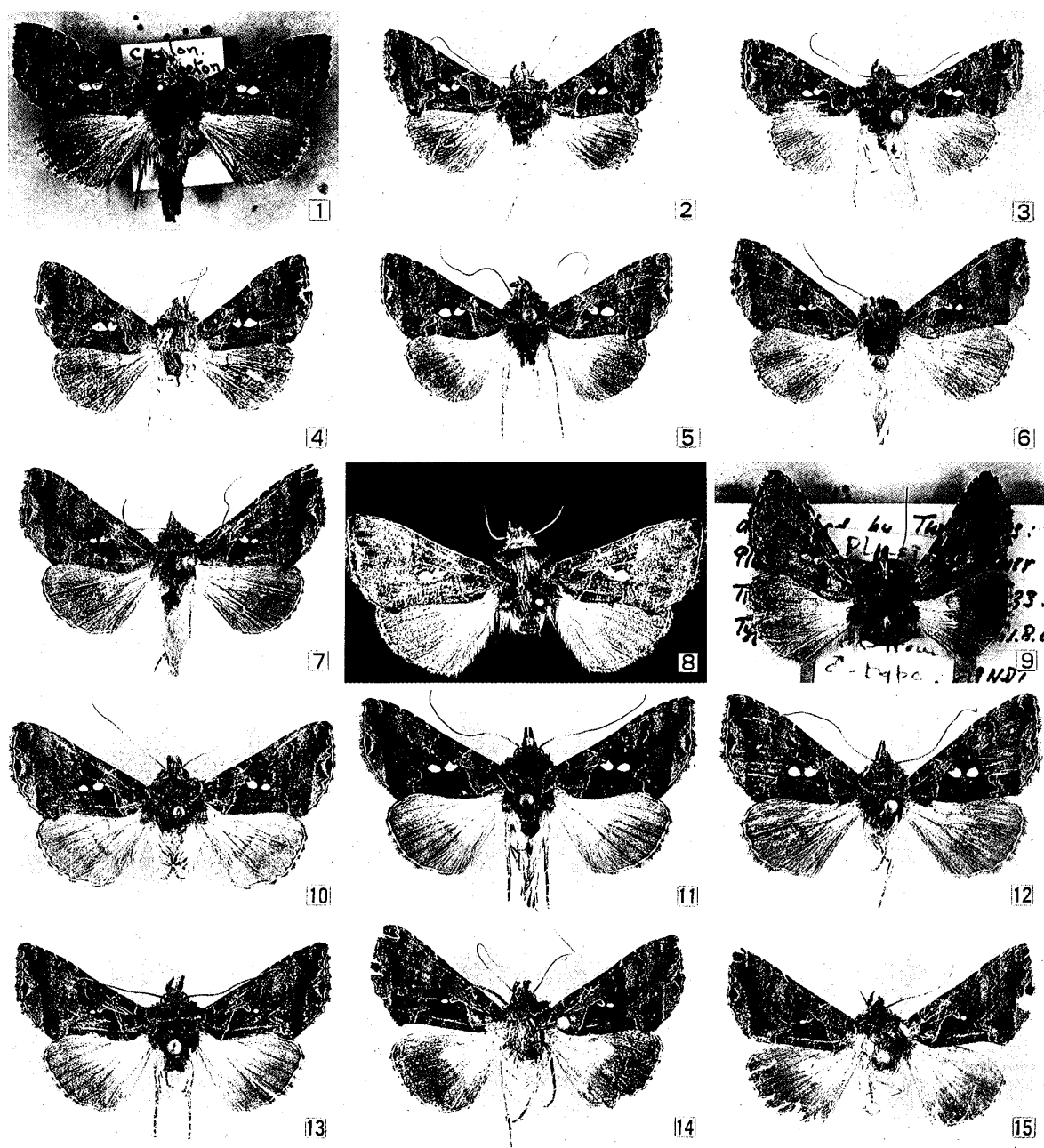
The genus *Scriptoplusia* was erected in 1987 on the basis of two species, *Plusia* (s. l.) *nigriluna* Walker, [1858] 1857 (type species) and the newly described *S. noona* by Ronkay. The subsequent studies revealed the fact that the genus is represented by a complex of closely related taxa, therefore the revision of the group is needed. The first results of this work are published here.

There are six nominal taxa belonging to the genus, which are as follows in order of their dates of publication:

nigriluna (Walker, [1858] 1857) (*Plusia*; Ceylon)
rubriflabellata (Prout, 1921) (*Plusia*; Goodenough Islands)
didymospila (Turner, 1933) (*Plusia*; Australia)
hokowensis (Chou & Lu, 1979) (*Argyrogramma*; China)
noona Ronkay, 1987 (Philippines)
kuznetzovi Klyuchko & Ronkay, 1993 (Vietnam).

The first three taxa were treated commonly by Holloway (1985) noticing that they possibly form a complex of species. *S. hokowensis* was synonymized with *S. nigriluna* by Ronkay (1986). In his work on the Plusiinae of Nepal, Dufay (1973) cited *S. nigriluna* (as *Plusia* s.

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Figs 1-15. *Scriptoplusia* spp. 1-7. *S. nigriluna nigriluna* (Walker). 1. Holotype, ♀, Sri Lanka. 2. Holotype of *S. kuznetzovi*, ♂, Vietnam. 3. ♂, Vietnam. 4. ♀, Sulawesi. 5. ♂, Luzon. 6. ♂, Sulawesi. 7. ♀, Sulawesi. 8. *S. nigriluna noona* Ronkay, holotype, ♂, Tawi Tawi. 9-12. *S. rubriflabellata* (Prout). 9. Holotype, ♂, Goodenough Islands. 10. ♂, New Ireland. 11. ♂, Luzon. 12. ♀, Luzon. 13-15. *S. pulchristigma* sp. n. 13. Paratype, ♂, Thailand. 14. Paratype, ♂, India. 15. Paratype, ♂, India.

l.) from the southern edges of the Palaearctic and the northern parts of the Oriental regions without mentions of either the names *rubriflabellata* and *didymospila* or the records of *nigriluna* from New Guinea or from Australia, which suggests that he considered them as species distinct from *nigriluna*. Sugi (1982) and Poole (1989) placed *nigriluna* into the genus *Trichoplusia*.

Results

As a result of the studies of the types and the additional material it was pointed out that *nigriluna* and *rubriflabellata* represent two distinct species occurring—at least partly—sympatrically in the Indo-Australian region. The variation of these two species are overlapping and the specimens can often be confused by their external features. The configuration of the genitalia shows good specific characteristics which are summarized under the species in the 'Systematic part' and are illustrated in Figs 16-21, 34-39, 40-42.

It became clear that the (female) type of *S. nigriluna* and the (male) specimens published by Ronkay (1987) under the name *nigriluna* are not conspecific; the genital figures of "*nigriluna*" in that work (see Figs 27-29) illustrate the male genitalia of *S. rubriflabellata* while those of *S. noona* (Figs 22-24) are almost the same as those of true *S. nigriluna*. The genitalia of *S. kuznetzovi* is also identical with those of *S. nigriluna*.

The relegation of the three other taxa is still uncertain. The species *S. noona* (known only by two males) has the genitalia highly similar to those of *S. nigriluna* (only the shape of valva and the apical part of vinculum shows slight differences) but the forewing pattern of the types displays features which have not found in any studied populations of *S. nigriluna*. This taxon represents most probably an isolated insular population of *S. nigriluna* having some modifications in the external features beyond the normal range of variation of the species. Therefore this taxon is considered here as a subspecies of *nigriluna* although further material would be important to check the real variation of this population.

S. hokowensis was described on the basis of a single male from China. The features can be stated by the drawings of the forewing pattern and the male genitalia (which is partly contradict with the short English diagnosis in case of the shape of vinculum) are almost exactly as in *S. nigriluna*. As we have had no opportunity to study the holotype of this taxon, the mentioned synonymy should be confirmed by a later study of the type.

The situation is similar in case of *S. didymospila*, as the description cannot serve as a good basis to decide whether this taxon is distinct from *S. nigriluna* or *S. rubriflabellata* or identical with one of them; the future study of the type is necessary. The only specimen of *Scriptoplusia* from Australia studied by us is a male of *S. rubriflabellata*, published as "*Plusia* (s. l.) *nigriluna*" (Ronkay, 1986).

It was also clarified that the *Scriptoplusia* populations occurring in the southern side of the Himalayan region and mentioned formerly as *S. nigriluna* (Dufay, 1973; Yoshimoto, 1993) represent a distinct, undescribed species.

The description of this new species, the diagnoses of the genitalia of *S. nigriluna* and *S. rubriflabellata* and the revised data of their distribution are given in the following chapter.

Checklist

Scriptoplusia Ronkay, 1987

nigriluna (Walker, [1858] 1857)

=? *hokowensis* (Chou & Lu, 1979)

= *kuznetzovi* Klyuchko & Ronkay, 1993, syn. n.

nigriluna noona Ronkay, 1987, stat. n.

pulchristigma sp. n.

rubriflabellata (Prout, 1921), stat. rev., comb. n.

? *didymospila* (Turner, 1933)

Systematic part

Scriptoplusia Ronkay, 1987

Annls hist.-nat. Mus. natn. hung. **79**: 170.

Type species: *Plusia nigriluna* Walker, [1858] 1857.

The genus was defined by the external and male genital features of the taxa which are given in details in the original description. The presence and location of the abdominal coremata and lateral tufts of hair are described accurately by Holloway (1985). The formerly unpublished diagnosis of the female genitalia of *S. nigriluna* shows that the ground plan of this genus has some affinity with that of *Anaplysia*, as well as the enshortened, swollen main part of vesica bearing two lateral diverticula without cornuti. Here it is mentioned that the overwhelming majority of the specimens preserved in the collections are males and we have had the opportunity to study the females of *S. nigriluna* and *S. rubriflabellata* only.

Scriptoplusia nigriluna (Walker, [1858] 1857) (Figs 1-7)

Plusia nigriluna Walker, [1858] 1857, *List Specimens lepid. Insects Colln Br. Mus.* **12**: 931.

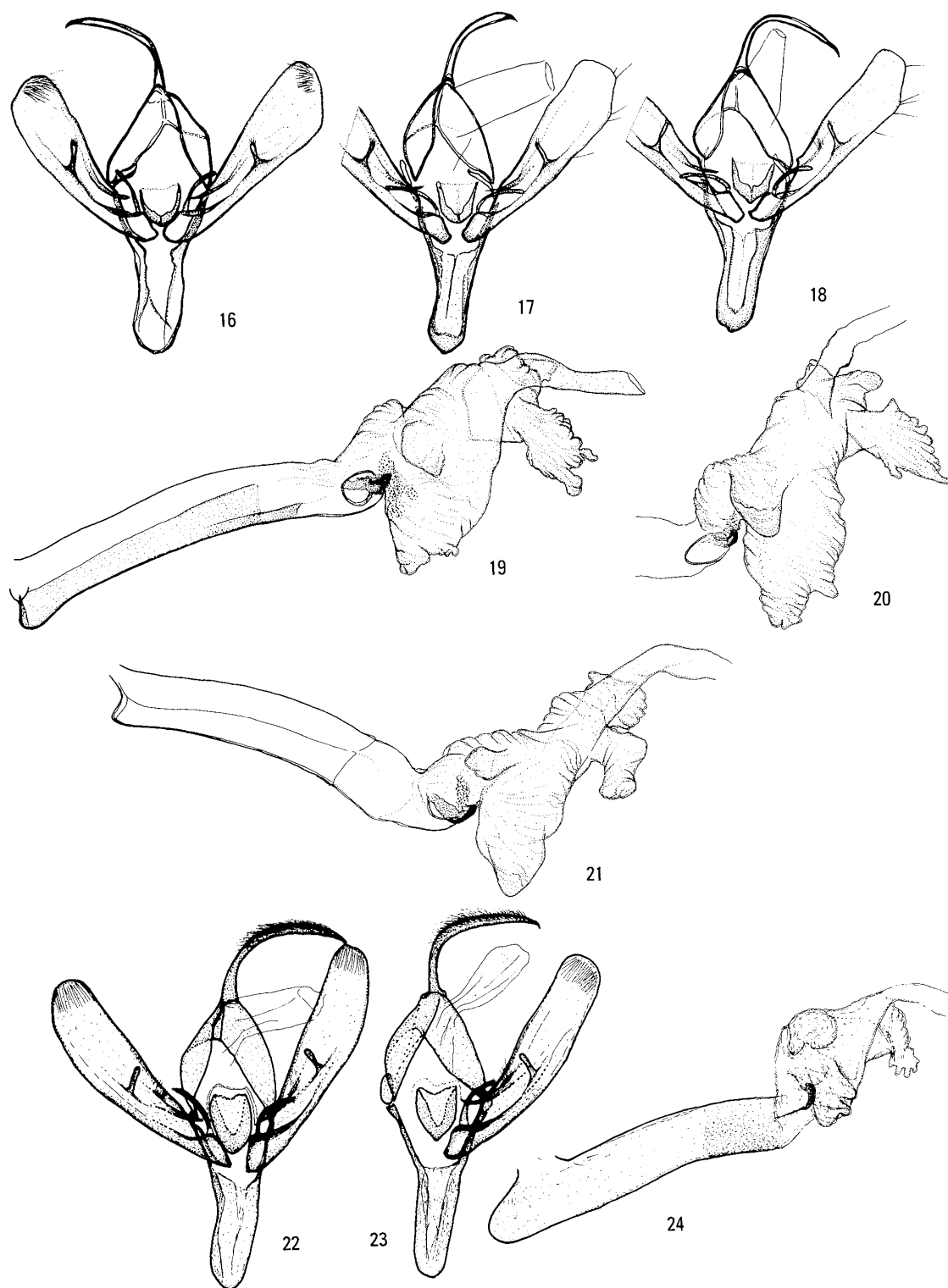
Argyrogramma hokowensis Chou & Lu, 1979, *Acta ent. sin.* **22**: 61, figs 2, 20.

Scriptoplusia kuznetzovi Klyuchko & Ronkay, 1993, in Klyuchko, *Ent. Obozr.* **72**: 382, fig. 3. Syn. n.

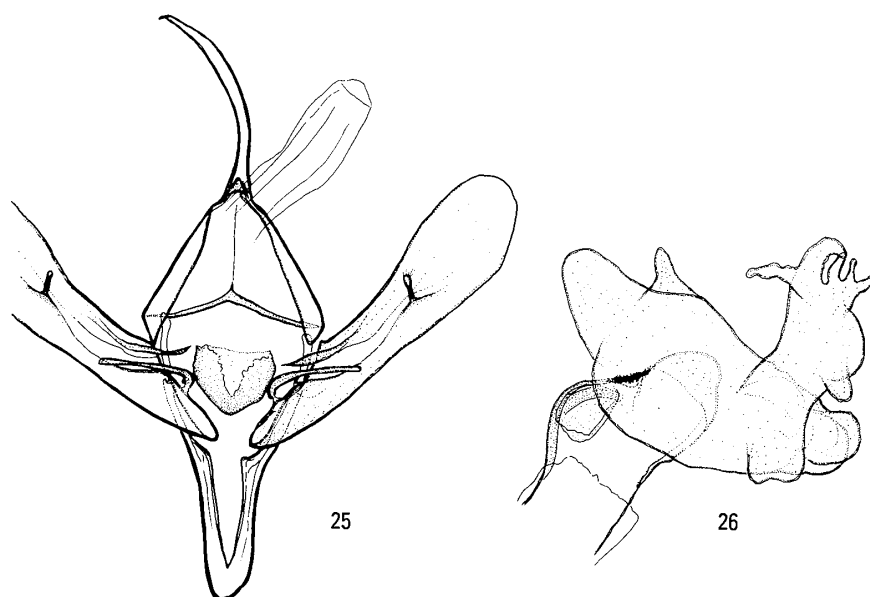
Type material examined. Holotype ♀, Ceylon (undissected) (coll. BMNH). Additional material examined. 12 ♂ 5 ♀ from the Philippines, Vietnam, Sulawesi, Sumatra and Thailand, Slide Nos HS003, HS094, 5102, 5103, Behounek (♂), HS008, HS072, HS076, Behounek (♀); 3141, 3149, 3915 Ronkay (♂), 3215, 3531 Ronkay (♀).

Diagnosis. Wingspan 24-27 mm, length of forewing 11-14 mm. The external morphology of the species is given satisfactorily by Hampson (1913); the details of the coloration and wing pattern of the related taxa will be compared with those of *nigriluna* in the following part of this chapter.

Male genitalia (Figs 16-21). Valvae relatively short and usually slightly asymmetrical, dilated distally with ventral margin angular at apical part and straight near apex, especially on right valva; apex slightly pointed at costal end. Harpae fine, weak, digitiform, more or less symmetrical. Tip of sacculus forms a small, rounded lobe at base of clavus; sclerotized distal lamina of sacculus less strong. Vinculum rather long, more or less U-shaped, sometimes with finely pointed terminal part. Aedeagus with vesica having a small



Figs 16-24. Male genitalia of *Scriptoplusia nigrilula* (Walker). 16-21. *S. nigrilula nigrilula* (16, 17, 19, 20. Philippines. 18, 21. Vietnam, holotype of *S. kuznetzovi*). 22-24. *S. nigrilula noona* (22, 24. Holotype. 23. Paratype).



Figs 25-26. Male genitalia of *Scriptoplusia pulchristigma* sp. n., paratype, Nepal.

field of minute spines at continuation of lateral bar of carina ; main sac of vesica rather small, pendulous ; distal part of vesica of a complex structure consisting of numerous small, cystiform diverticula arranged into a cauliflower- or a moose-antler-like complex.

Female genitalia (Figs 40, 41). Ovipositor short and rather broad, less sclerotized, gonapophyses fine, moderately long. Ostium bursae flattened, wide and relatively long trapezoidal, granulatedly sclerotized. Posterior part of ductus bursae constricted, membranous, rugose, anterior half more or less conical, scobinate and/or wrinkled. Cervix bursae membranous, more or less conical with characteristic "cap-shaped" upper part. Corpus bursae elliptical-globular, membranous, without signa.

Distribution. The species inhabits northern Oriental-southern Palaearctic area, occurring in Ceylon (Sri Lanka), South India, Malaysia, the eastern and south-eastern parts of Thailand, Indochina, (? south or south-east) China (*S. hokowensis*), the southwestern isles of Japan, the Philippines, Borneo, Sumatra and Sulawesi.

***Scriptoplusia nigriluna noona* Ronkay, 1987, stat. n. (Fig. 8)**

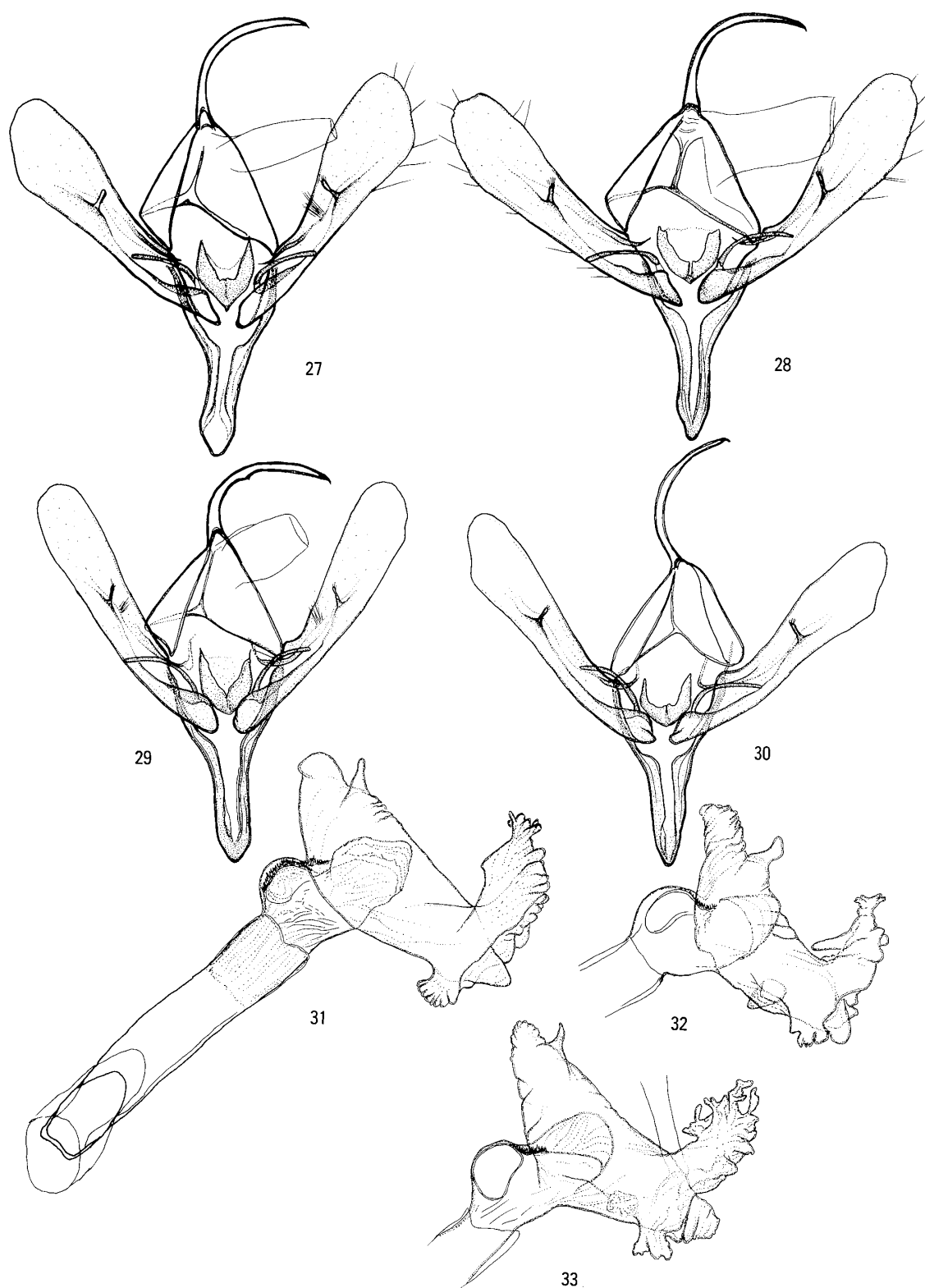
Scriptoplusia noona Ronkay, 1987, *Annls hist.-nat. Mus. natn. hung* **79**: 171, figs 1, 2.

Type material examined. Holotype ♂ and paratype ♂ from southern Philippines, Tawi Tawi, Tarawakan, north of Batu Batu. Slide Nos 1980, 2055 Ronkay (♂).

Diagnosis. The subspecies is similar to the nominate *nigriluna* but the two spots of the stigma are conjoined, the outer part of the median area is lighter and the medial line is stronger, well-visible.

Male genitalia (Figs 22-24). Differ from those of *nigriluna nigriluna* only in the narrower, less angular distal part of the valva.

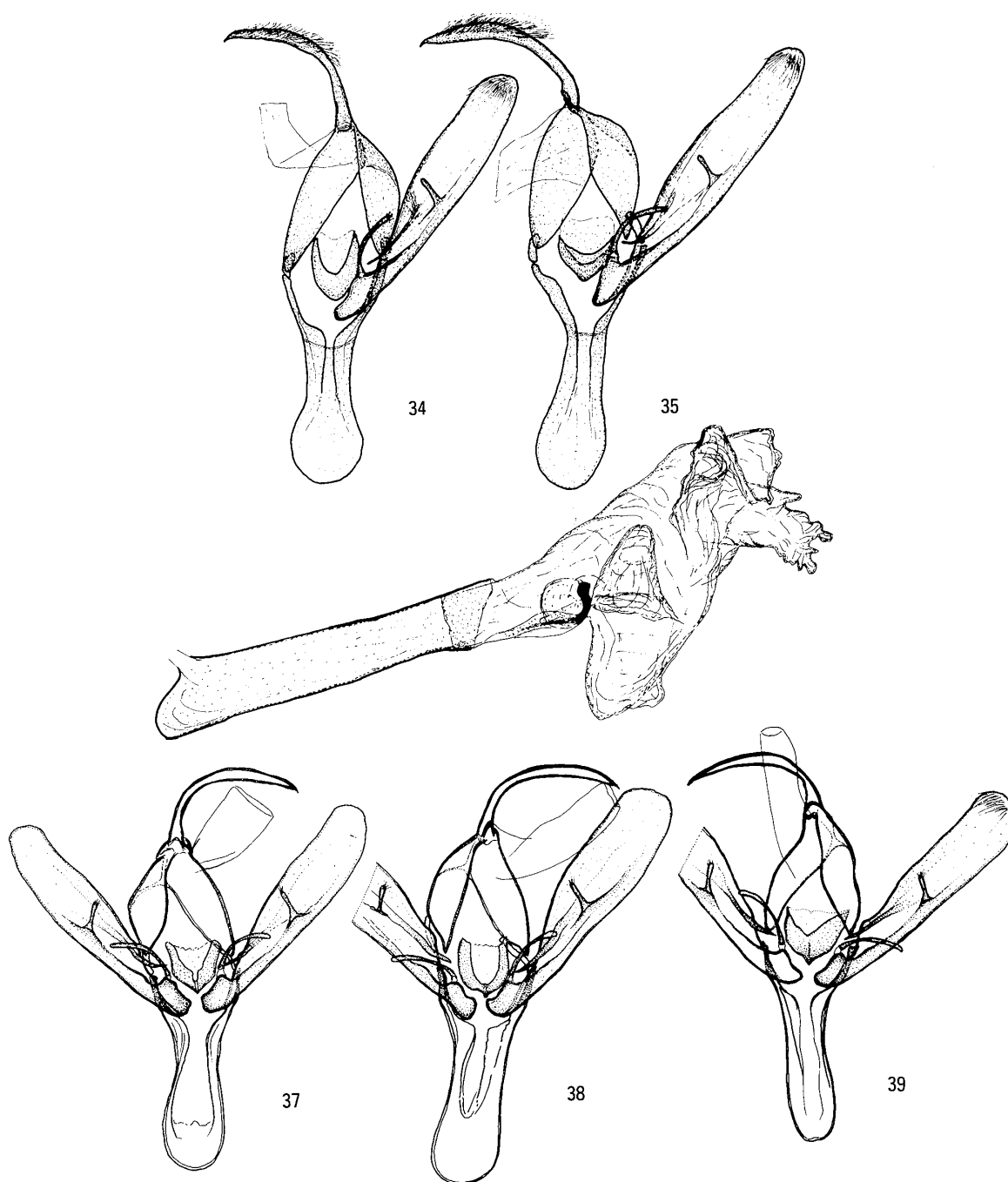
Distribution. This subspecies occurs in the southwestern edge of the Philippines located very close to the easternmost peninsula of Borneo.



Figs 27-33. Male genitalia of *Scriptoplusia pulchristigma* sp. n., paratypes (27, 28, 33. India. 29, 30, 32. Thailand. 31. Nepal).

***Scriptoplusia pulchristigma* sp. n. (Figs 13-15)**

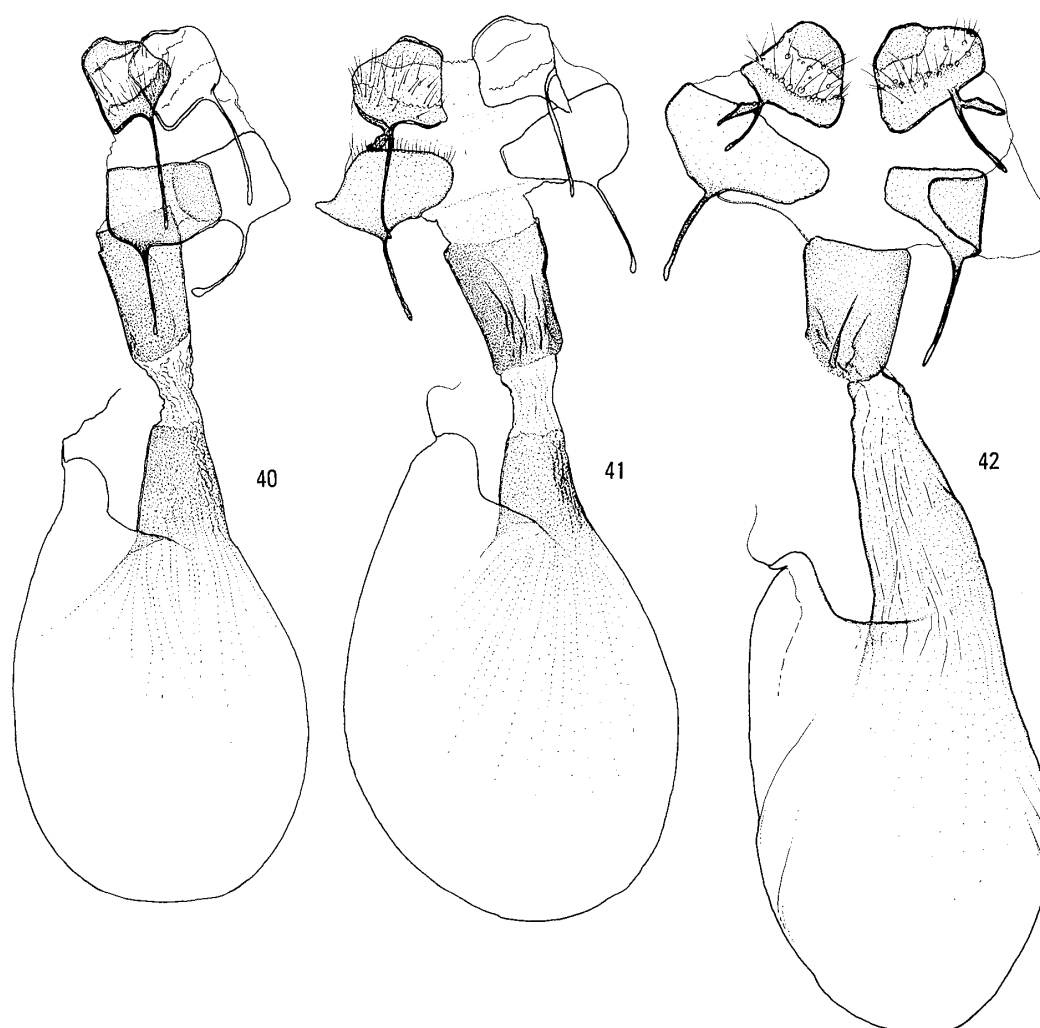
Plusia (s. l.) *nigriluna*: Dufay, 1973, *Ergebn. ForshUnternehmens Nepal Himalaya* 3: 398.



Figs 34-39. Male genitalia of *Scriptoplusia rubriflabellata* (Prout) (34, 36, 37, 39. Philippines. 35, 38. New Ireland).

Scriptoplusia nigriluna: Yoshimoto, 1993, *Tinea, Tokyo* 13 (Suppl. 3): 53 pl. 44, fig. 27.

Holotype. ♂, Nepal, Kathmandu, Mt Phulchouki, 2,075 m, ix. 1991, preserved in the National Science Museum, Tokyo. The holotype specimen was figured by Yoshimoto, 1993, pl. 44: 27, as *nigriluna*. Paratypes. Nepal—3 ♂, Godavari, 1,600 m, 14-15. vi. 1990 (coll. H. Yoshimoto, Tokyo), 1 ♂, same locality, 17. vii. 1990 (coll. H. Yoshimoto, Tokyo), 1 ♂, same locality, 3. viii. 1991 (coll. H. Yoshimoto, Tokyo), 1 ♂, same locality, 24. vi. 1991 (coll. G. Behounek, Deisenhofen); 1 ♂, Kathmandu Valley, Godavari, 800-1,800 m, 1. vi.



Figs 40-42. Female genitalia of *Scriptoplusia* spp. 40-41. *S. nigriluna* (Walker) (40. Sulawesi. 41. Vietnam). 42. *S. rubriflabellata* (Prout), Philippines.

1967, leg. Dierl-Forster-Schacht (ZSM, Munich). North India—2 ♂, Kumaon Himalaya, Distr. Naini Tal, Bhim valley, 1,500 m, 10-22. ix. 1986, leg. A. Hauenstein (coll. H. Hacker, Staffelstein); 1 ♂, Bhimtal, 1,500 m, 20. v. 1978 (coll. H. Thöny, Ingolstadt). North Thailand—1 ♂, Nan Prov., Doi Phu Kha National Park, km 35.4, 1,540 m, 24. vii. 1990, leg. I. J. Kitching, B. M. 1990-171 (BMNH, London); 1 ♂ same locality, km. 33.8 to 34.4, 1,640-1,685 m, 26-30. xii. 1991, leg. I. J. Kitching and A. M. Cotton, B.M. 1992-13 (BMNH, London); 4 ♂, same locality, 1,600 m, 17-25. ii. 1993 (coll. HNHM Budapest and G. Ronkay); 7 ♂, same locality, 22. ii. 1993, leg. W. Speidel (coll. W. Speidel and G. Behounek). Slide Nos 5088, 5147 Behounek (♂); 3532, 4590, 4634, 4635 Ronkay (♂).

Diagnosis. Wingspan 26-27 mm, length of forewing 12-13 mm. The coloration and wing pattern of the species is similar to those of the other members of the genus, the size and the shape of wings agree with those of *S. rubriflabellata*. As compared with the two related species, the external differences are the following: the stigma is very small and fine, the inner spot is clearly V-shaped, oblique, the outer spot is a tiny silvery dot; the angle of the postmedial line below the stigma is longer and deeper; the large black-brown spot of

terminal line at vein Cu_1 is broader but shorter, more or less triangular; the violaceous-bluish irroration of the forewing has a characteristic pinkish shade; the broad dark marginal field of hindwing is heavier in both surfaces; the discal spot of hindwing is regularly missing.

The new species differs from both *S. nigriluna* and *S. rubriflabellata* in the first four features listed above. The coloration of the hindwing shows a rather wide range of variation within the three species of the genus, the upperside of the hindwing of *S. nigriluna* and *S. pulchrestigma* is often very similar but usually more contrasty in case of the new species, especially on the underside. The inner area of the hindwing of *S. rubriflabellata* is regularly darker: irrorated by brownish and the covering of the veins is stronger; the discal spot is present in almost every case.

Male genitalia (Figs 25–33). The whole apparatus is significantly larger than that of *S. nigriluna* and *S. rubriflabellata*. The valvae are longer than in case of the two other taxa, and the distal part has stronger dilatation but the apical part is evenly rounded. The harpae are short, asymmetric, originating from the middle of the valva; the sclerotized bar in continuation of the sacculus and fused with the basal plate of the harpe is angled toward the costal margin at place of harpe, therefore the base of the harpe is situated rather far from the ventral margin. In case of the two other species these bars are more or less parallel with the ventral margin, so the harpe is situated significantly more ventrally. The vinculum is relatively short—the proportion of the valva/vinculum is largest in this species —, V-shaped with a narrow medial and a pointed triangular apical parts while evenly broad (in *nigriluna*) or apically dilated (in *rubriflabellata*) in the other *Scriptoplusia* species and the apex of it is rounded or only finely pointed. The basal diverticulum of vesica is with longer and more numerous spiculi, the main sac of the vesica is more elongated, setting in right angle to the axis of the aedeagus; the distal field of diverticulum is larger and more complex.

The female is unknown.

The newly described species appears as relatively remote from the two other taxa of this close complex by some of its genital features. It is derived probably from *S. nigriluna* as a result of speciation of a marginal population.

Distribution. The species is restricted to the southern and south-eastern confines of the Himalayan region (India, Nepal, northern Thailand), and its range is seemingly allopatric with that of *S. nigriluna*.

***Scriptoplusia rubriflabellata* (Prout, 1921), stat. rev., comb. n. (Figs 9–12)**

Plusia rubriflabellata Prout, 1921, *Ann. Mag. nat. Hist.* (9) 8: 25, pl. 4: 2.

Type material examined. Holotype ♂, Goodenough Isles, New Guinea (coll. BMNH). Additional material examined. 38 ♂ from the Bismarck Islands, New Ireland (coll. ZM Copenhagen and HNHN Budapest); 6 ♂ 1 ♀ from the Philippines, North Luzon, Ifugao, Banaue, 22. ix–16. x. 1988, leg. K. Cerný & A. Schintlmeister (coll. G. Behounek, Deisenhofen and HNHN Budapest); 1 ♂ from Australia, NE Queensland, Conway Range National Park, 21. ii. 1981, (HNHN Budapest). Slide Nos 5083, 5104 Behounek (♂), 5084 Behounek (♀); 1981, 2080, 3142, 3150 Ronkay (♂).

Diagnosis. The species is larger than *nigriluna* (wingspan 25–27 mm, length of forewing 11–12 mm), the size and the shape of wings are almost the same as those of *S. pulchristigma*. The two spots of stigma are large, usually rounded, often rather far from each other; the blackish spot at outer margin is elongated and narrow. The inner part of the hindwing is most often irrorated by brownish, the dark marginal area is relatively pale, the transverse line, the submarginal stripe and the discal spot are usually visible on both surfaces.

Male genitalia (Figs 34–39). As mentioned in the diagnoses of the former two species, the valvae are long with more or less parallel margins and less dilated distal part and apex rounded and the vinculum is very long with regularly broadened and rounded apical third.

Female genitalia (Fig. 42). Very similar in configuration to those of *S. nigriluna* but the ostium bursae is shorter, the ductus bursae is somewhat longer with weaker proximo-lateral scobination.

Distribution. The area of the species is concentrated to the eastern-southeastern territories of the Oriental region, the northern and western borders of its range are unclear. The confirmed localities of the species are the Northern Philippines, the Bismarck Islands, New Guinea and Australia. The photo of the female specimen of *S. 'nigriluna'* in Holloway (1985) from Borneo (pl. 8, fig. 18.) may belong also to this species; on the other hand, the male genitalia illustrated by him (fig. 332) is identical with those of *nigriluna*. Similarly, there are some doubt concerning with the identity of the specimen illustrated on pl. 200, fig. 21 in the book '*Moths of Japan*' (Sugi, 1982); further investigations are needed to clarify whether *S. rubriflabellata* occurs in Borneo and/or in the southern islands of Japan.

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摘 要

クロガネキンウワバ属の再検討と1新種の記載 (Gottfried Behounek and Laszló Ronkay)

属 *Scriptoplusia* Ronkay, 1987 は, Sri Lanka から記載されたクロガネキンウワバ (*Plusia nigriluna* Walker, [1858]) を模式種として創設されたもので, インド-オーストラリア区にかけてさらにいくつかの互いに近縁な taxa を含んでいる. それらの分類はこれまで再検討されなかったが, 本報では解析の終わった5つの taxa の整理と1新種の記載を行なった.

Scriptoplusia nigriluna (Walker, [1858]) クロガネキンウワバ

中国南部から書かれた *hokowensis* については模式標本を見ていないが, 前翅斑と♂交尾器図はほぼ正確に *nigriluna* に一致する. また, ベトナムからの *kuznetzovi* を本種のシノニムとした.

Scriptoplusia nigriluna noona Ronkay, 1987, stat. n.

原名亜種に似るが, 前翅中央の銀紋は分離せず, 中央域外方は地色がより明るく中横線も強く現われる点で区別できる.

Scriptoplusia pulchristigma Behounek & Ronkay, sp. n.

Nigriluna の元に誤って記録・図示されているが, 斑紋, ♂交尾器共安定した違いのある新種である. 前翅の銀紋は常に小さく, 外横線の銀紋下での屈曲は強く深い.

Scriptoplusia rubriflabellata (Prout, 1921), stat. rev., comb. n.

前翅の2個の銀紋は大きく, 互いにより離れる. ♂交尾器の valva は細長く, 先端もあまり広がらない. Vinculum も長く, 末端 2/3 では幅広く, 丸みを持つ.

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